

GROUP SUMMARY CC

The Command, Control, and Communications (C3) Academic Group is an interdisciplinary association of faculty which consists of 25 faculty members who hold appointments in 9 departments/groups at the Naval Postgraduate School, plus the Curricular Officer. The C3 Academic Group has responsibility for the academic content of the Joint Command, Control, Communications, Computers, and Intelligence Systems curriculum and the Scientific and Technical Intelligence curriculum. C3 Academic Group faculty members carry out research in C41 systems, broadly defined, to support these two curricula.

During 1997, the C3AG consisted of the following members:

Lieutenant Colonel Michael Mullady, USAF, Curricular Officer
Professor Dan C. Boger (Command, Control and Communications), Chair
Lecturer Rex A. Buddenberg (Systems Management)
Professor Ralph N. Channel (National Security Affairs)
Professor Kenneth L. Davidson (Meteorology)
Professor Donald P. Gaver (Operations Research)
Lieutenant Colonel John Gibson, USAF (Command, Control and Communications)
Senior Lecturer Wayne P. Hughes (Operations Research)
Lieutenant Commander Steven J. Iatrou, USN (Information Warfare)
Professor Carl R. Jones (Systems Management)
Associate Professor William G. Kemple (Command, Control and Communications)
Professor Herschel H. Loomis (Electrical and Computer Engineering)
Professor Orin E. Marvel (Command, Control and Communications)
Associate Professor Gordon McCormick (Command, Control and Communications)
Associate Professor Paul H. Moose (Electrical and Computer Engineering)
Associate Professor John S. Osmundson (Command, Control and Communications)
Professor Patrick J. Parker (Command, Control and Communications)
Associate Professor Gary R. Porter (Command, Control and Communications)
Associate Professor Craig Rasmussen (Mathematics)
Professor Nancy C. Roberts (Systems Management)
Associate Professor Timothy J. Shimeall (Computer Science)
Professor Michael G. Sovereign (Command, Control and Communications)
Associate Professor Donald v.Z. Wadsworth (Electrical and Computer Engineering)

An overview of the Command, Control, and Communications (C3) Academic Group research program follows.

Thesis Support for the Operational Support Office

Dan Boger continued his research with NPS thesis students into the potential benefits to the Joint Task Force Commander for real-time command and control of warfighting forces through the direct downlinking of information from sensors. By examining specific JTF-level scenarios, several alternative concepts of operation for directly-linked sensor information are compared to current, existing sensor information architectures. Measures of effectiveness focus on the tradeoff of latency for quality of information. Scenarios involving both generic command and control as well as targeting-quality information for specific weapons systems are being evaluated.

Support for TADMUS Experiments and Data Analysis

Research Psychologist Susan Hutchins continued research support to the Tactical Decision Making Under Stress (TADMUS) Program, sponsored by Office of Naval Research. The objective of the TADMUS program is to apply recent developments in decision theory, individual and team training, and information display to the problem of enhancing tactical decision quality under conditions of stress. The specific research support in this project is being provided to Naval Command

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Control Communications and Ocean Surveillance Center Research and Redevelopment Division (NRaD), where the experiments are being conducted, and this support includes a decision support system, training strategies, and alternative human-machine interface concepts. Experimentation using specific anti-air scenarios is used to assess the effectiveness of the newly developed decision support system.

Adaptive Architectures for Command and Control

William Kemple and Michael Sovereign contributed to a four-year, continuing project whose objectives are to: extend twelve years of Navy decision-making research into the joint C2 arena; expand the domain beyond the frequently studied anti-air warfare arena; focus on adaptive architectures; and produce results ranging from purely theoretical to those that can be used by the operational forces in the near term. This project is the NPS portion of a government, industry, academe team formed by Office of Naval Research to carry out this program.

Command, Control, and Communications (C3) Analysis Techniques

William Kemple continued an on-going research project whose main objective is to identify research topics of current interest to the Marine Corps and match thesis students with these topics. Emphasis is on measuring C3 systems effectiveness and identifying futuristic C3 technologies which, if developed and implemented, might enhance MAGTF C3 capabilities and support the new Marine Corps Operational Maneuvers from the Sea (OMFTS) and Operation Other Than War (OOTW) concepts.

Support for the Joint C4I Chair Professorship

Orin Marvel, the holder of the Joint C4I Chair Professorship sponsored by the Defense Information Systems Agency, continued his research in systems engineering for C4I systems and theater missile defense. He also continued his support of the Joint C4I Systems curriculum through further development of systems engineering projects and courses.

Targeting Underground Organizations

Gordon McCormick and Guillermo Owen, Department of Mathematics, developed a formal framework for evaluating the dynamics of sub-state conflict and used this framework to examine ways in which to improve our ability to target terrorist organizations.

Special Operations/Low Intensity Conflict (SO/LIC) Curriculum Teaching and Research Support

Gordon McCormick continued his project which provides instructional and research support to the students and faculty of the Special Operations Curriculum.

Command and Control of Underground Organizations

Gordon McCormick examined the functions, methods, and structures of underground systems of command and control. Specific examples are analyzed as cases.

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Global Broadcast System Testbed

Paul Moose began procuring equipment to support the installation of a downlink testbed for the Global Broadcast System (GBS) in the NPS System Technology Laboratory (STL).